What is claimed is:

1. An electrode, which comprises:

a) an electrode active blank characterized as formed from an electrode active mixture comprising an electrode active material that is capable of intercalation of alkali metal ions and that was mixed with a fluoro-polymeric material in a solvent to form the mixture having been subjected to a first calendaring device contacting the electrode active mixture in a first direction to form a first structure, the first structure having first and second spaced apart major sides extending to a first peripheral edge providing the first structure with a first thickness, wherein the first structure was then subjected to at least one second calendering device contacting the electrode active mixture in a second direction with the first structure in a bottom over top orientation with respect to the orientation of the first structure, and wherein the solvent was removed from the electrode active mixture after the mixture was formed; and

b) a conductive substrate having at least one electrode active blank contacted to at least one of a first and second major surfaces of the conductive substrate.

2. An electrode, which comprises:

a) an electrode active blank characterized as formed from an electrode active mixture comprising an electrode active material that is capable of intercalation of alkali metal ions and that was mixed with a fluoro-polymeric material in a solvent to form the mixture having been subjected to a first calendaring device contacting the electrode active mixture in a first direction to form a first structure, the first structure having first and second spaced apart major sides extending to a first peripheral edge providing the first structure with a first thickness, wherein the first structure was then subjected to at least one second calendering device contacting the electrode active mixture in a second direction substantially orthogonal to or reverse to that which provided the first structure to provide a second structure having the first and the second spaced apart major sides extending to a second peripheral edge of a second thickness less than the first thickness, and wherein the second structure was then subjected to at least one third calendaring device contacting the electrode active material in a third direction with the second structure in a bottom over top orientation with respect to the orientation of the first and second structures to thereby provide a third structure having the first and second spaced apart major sides extending to a third peripheral edge of a third thickness less than the second thickness, and wherein

the solvent was removed from the electrode active mixture after the mixture was formed; and

b) a conductive substrate having at least one electrode active blank contacted to at least one of a first and second major surfaces of the conductive substrate.

3. The electrode of claim 2 wherein the electrode active mixture comprises from about 80 weight percent to about 99 weight percent of the electrode active material.

4. The electrode of claim 2 wherein the electrode active material is a metal-containing material.

5. The electrode of claim 2 further comprising a conductor material.

6. The electrode of claim 2 wherein the electrode active mixture comprises about 3 weight percent carbon, about 3 weight percent of the fluoro-polymeric material and about 94 weight percent of the electrode active material comprising a metal-containing material.

7. The electrode of claim 2 wherein the electrode active material is selected from the group consisting of carbon, fluorinated carbon, silver vanadium oxide, copper silver vanadium oxide, manganese dioxide, titanium disulfide, cobalt oxide, nickel oxide, copper sulfide, iron sulfide, iron disulfide, copper vanadium oxide, $LiNiO_2$, $LiMn_2O_4$, $LiCoO_2$, $LiCo_{0.92}Sn_{0.08}O_2$, $LiCo_{1-x}Ni_xO_2$, and mixtures thereof.

8. The electrode of claim 2 wherein the electrode active blank has a thickness in a range of from about 0.004 inches to about 0.020 inches.

9. The electrode of claim 2 wherein at least one electrode active blank is pressed onto each side of the conductive substrate.

10. The electrode of claim 9 wherein the conductive substrate is perforated and the perforations provide for locking the electrode active blanks together.

11. An electrochemical cells, which comprises:

a) a first electrode;

b) a second, counter electrode, wherein at least one of the first and second electrodes is comprised of:

i) an electrode active blank characterized as formed from an electrode active mixture comprising an electrode active material that is capable of intercalation of alkali metal ions and that was mixed with a fluoro-polymeric material in a solvent to form the mixture having been subjected to a first calendaring device contacting the electrode active mixture in a first direction to form a first structure, the first structure having first and second spaced apart major sides extending to a first peripheral edge providing the first structure with a first thickness, wherein the first structure was then subjected to

at least one second calendering device contacting the electrode active mixture in a second direction other than the first direction, but in a bottom over top orientation with respect to the orientation of the first structure, and wherein the solvent was removed from the electrode active mixture after the mixture was formed; and

ii) a conductive substrate having at least one electrode active blank contacted to at least one of a first and second major surfaces of the conductive substrate; and

c) an electrolyte activating the first and second electrodes.

12. The electrochemical cell of claim 11 wherein the electrode active mixture comprises from about 80 weight percent to about 99 weight percent of the electrode active material.

13. The electrochemical cell of claim 11 wherein the electrode active material is a metal-containing material.

14. The electrochemical cell of claim 11 wherein the electrode active mixture further comprises a conductor material.

15. The electrochemical cell of claim 11 wherein the electrode active mixture comprises about 3 weight percent carbon, about 3 weight percent of the fluoro-polymeric material and about 94 weight percent of the electrode active material comprising a metal-containing material.

16. The electrochemical cell of claim 11 wherein the electrode active material is selected from the group consisting of carbon, fluorinated carbon, silver vanadium oxide, copper silver vanadium oxide, manganese dioxide, titanium disulfide, cobalt oxide, nickel oxide, copper sulfide, iron sulfide, iron disulfide, copper vanadium oxide, $LiNiO_2$, $LiMn_2O_4$, $LiCoO_2$, $LiCo_{0.92}Sn_{0.08}O_2$, $LiCo_{1-x}Ni_xO_2$, and mixtures thereof.

17. The electrochemical cell of claim 11 wherein the electrode active blank has a thickness in a range of from about 0.004 inches to about 0.020 inches.

18. The electrochemical cell of claim 11 wherein at least one electrode active blank is pressed onto each side of the conductive substrate.

19. A method for preparing an electrode, comprising the steps of:

a) providing an electrode active material;

b) mixing the electrode active material with a fluoro-polymeric material in a solvent to form an electrode admixture paste comprising the electrode active material;

c) calendering the paste into a first structure of the electrode admixture having a first thickness by contacting the paste in a first direction;

d) calendering the first structure into a second structure having a second thickness less than the first thickness by contacting the electrode admixture

in a second direction having the first structure rotated bottom over top with respect to the orientation that formed the first structure; and

e) contacting the electrode active structure to at least one of a first and second major surfaces of a conductive substrate.

20. The method of claim 19 including calendaring the first structure into an intermediate structure before forming the second structure, the intermediate structure having an intermediate thickness less than the first thickness by contacting the electrode admixture in a direction substantially orthogonal to or in a reverse direction to that which formed the first structure.

21. The method of claim 19 including adding a conductor material to the electrode admixture.

22. The method of claim 19 including providing the paste comprised of about 3 weight percent carbon, 3 weight percent of the fluoro-polymeric material and about 94 weight percent of the electrode active material.

23. The method of claim 19 including providing the electrode active material comprising a metal-containing material.

24. The method of claim 19 including selecting the solvent from the group consisting of water and an inert organic material.

25. The method of claim 19 including subjecting the electrode active material to a grinding step that reduces its particle size from a granular electrode active material to a finely divided particle size prior to mixing with the fluoro-polymeric material and the solvent forming the paste.

26. The method of claim 19 including forming the paste into the cathode sheet by feeding the paste through a series of roll mills as the first calendering step forming the first structure.

27. The method of claim 19 including the step of first feeding the paste into a compaction mill that serves to provide the electrode active material in a pellet form prior to introduction to the first calendaring step.

28. The method of claim 19 including selecting the electrode active material from the group consisting of carbon, fluorinated carbon, silver vanadium oxide, copper silver vanadium oxide, manganese dioxide, titanium disulfide, cobalt oxide, nickel oxide, copper vanadium oxide, $LiNiO_2$, $LiMn_2O_4$, $LiCoO_2$, $LiCo_{0.92}Sn_{0.08}O_2$, $LiCo_{1-x}Ni_xO_2$, and mixtures thereof.

29. The method of claim 19 wherein the step of forming the paste into the electrode active structure further comprises the dropwise addition of a liquid electrolyte.

30. The method of claim 19 wherein the electrode active structure has a thickness in the range of from about 0.004 inches to about 0.020 inches.

31. The method of claim 19 including removing residual solvent from the electrode active material by drying the electrode active material.